

## Potential Thesis or Project Topics

If you are interested in these topics, please contact your Professor or COL Tarantino at GSOIS, he can assist you with the initial sponsor contact and answer questions concerning the topic.

If you are a potential sponsor, please contact COL Tarantino and he will assist in adding your topics to this list.

Sponsor: Dr. Craig College, Deputy Assistant Secretary of the Army  
(Infrastructure Analysis)

POC: Dr. Chien Huo, Operations research Analyst

1. Determine and evaluate opportunities to leverage public and/or private community partnerships to increase investments in the installation facilities and supporting services the Army needs to maintain a high standard for quality of life for soldiers and their families.
2. Examine the historical Army MILCON and disposal efforts. Develop a decision support system that introduces the concept of "Footprint management over time". This system should highlight the impacts of BRAC and other MILCON decisions so that the Army can see the global impact of such decisions over time and make more informed decisions in the future.
3. Investigate an interactive, near real-term dynamic model, that monitors BRAC implementation and completion. This system would lead to a web-based system that tracks all projects, units, MILCON, and other actions related to BRAC. The system would enable real time reporting to Army leadership, forecast completion, and describe budget impacts.
4. Recommend improvements to current infrastructure assessment tools (ie., ISR) based on prevailing industrial real estate management approaches and commercial technology.
5. Examine the possibility of using auction systems to enable early disposal of selected BRAC properties.
6. The Army defines requirements using linear or step function scales for all facility types. Some of these facility types can be provided within the community and/or necessitate a different metric to establish realistic requirements. Examine the possibility of different metrics as applied to community facility types with respect to these different scales.

Sponsor: TRAC-Monterey Current FY06 Research

## **1. Support to Rapid Equipping Force (REF)**

Project Description: REF lacks standard procedures for systems engineering and management in the analysis of potential acquisition products. Purpose is to:

- Provide modeling, simulation, and analysis support to the REF.
- Develop generalized REF analysis and implementation methodology and supports the training of REF personnel on the developed methodology.

Technical Approach:

- Develop REF Analysis Methodology.
- Demonstrate Application of the Developed Analysis Methodology (Analysis).
- Assess Impact of REF-Delivered Capabilities.

Sponsor: REF

Partners: TRAC

General Research Topic:

Alternative comparison, distribution plan, assessment and analysis of systems (e.g. PocketTerp) for the Rapid Equipping Force

PocketTerp Concept:

- iPaq modification allows user to prerecord translations for specific phases with voice print recorded that can be recalled
- System can be programmed to hold hundreds of phrases
- Reprogram-able in the field
- System can be used for other functions as well as a translator.
- Modified to hook up to speaker system
- Weight: <1 lb

Current REF Systems:

- Packbot
- PocketTerp
- Magnetometer
- Lock Shim
- Wellcam
- Armor Kit
- PILAR

## **2. Multi-Purpose Enterprise Simulation Suite (MPESS)**

Project Description: The vision for MPESS is on independent and replaceable models that move from various levels of fidelity and resolution reflective of the situation and players. Technical solutions will be robust, interoperable, reusable and in synchronization with current Battle Command, operations-to intelligence initiatives, and M&S programs.

Technical Approach:

- Create core infrastructure concepts for scenario development, execution and AAR.
- Assist development and PoP demonstration of the MPESS CRM.

- Outline requirements for conceptual and data exchange models (e.g. C2IEDM).

Sponsor: BCSE

Partners: DARPA “Big Worlds”, REF, JIED TF.

General Research Topic:

- Development of concepts and alternatives for a Multi-Purpose Enterprise Simulation Suite(s) (MPESS).

Initial focus will be IED Training Simulation.

### **3. Modeling Close Range, Quick Reaction Engagements**

Technical Approach: Within framework of Systems Engineering and Management Process (SEMP); extensive research and SME interviews; use of ABMs in the context of value modeling to identify critical factors; creation of simulation algorithms for TTPs, extensive SME input throughout process.

Sponsor: Soldier FACT

Partners: TBD

Project Description: Investigation of the critical factors required to model Soldier activities in close range and quick reaction engagements; identification and modeling of TTPs for such engagements; development of algorithms to represent close range and quick reaction engagements. Provides the foundation for future modeling and data collection efforts.

General Research Topic:

- Identification and analysis of the factors that impact the individual combatant in close quarters and quick reaction engagements.

MANA (left) and Pythagoras (right), agent based simulations, can be used to run a large number of scenarios quickly.

### **4. Future Force Warrior (FFW) Capabilities Analysis**

Technical Approach: Within framework of Systems Engineering and Management Process (SEMP); extensive research and SME interviews; value modeling to capture stakeholder preferences and MOEs; experimental design to test potential capability distributions/TTPs; experiments run in simulation, including ABMs, to determine optimal distributions and TTPs; recommend distributions/TTPs.

Sponsor: PM FFW

Partners: TBD

Project Description: Investigation of potential TTPs and distributed capabilities through subject matter experts (SMEs) and modeling and simulation (M&S).

The FFW program needs an analytical methodology to evaluate TTPs and to tweak them as a result of that analysis, as well as an analytical methodology to determine the optimal distribution of potential FFW capabilities.

General Research Topics:

- Capabilities: analyze the proposed FFW system and compare it with the current soldier and the Land Warrior system.
- Basis of Issue (BOI): analyze the distribution of potential FFW capabilities to the members of the small combat unit.
- TTPs: analyze the effects of proposed FFW capabilities on TTPs.

- Other: training, facilities, logistical issues.

MANA (agent based simulation) and IWARS screenshots showing potential models for analysis.

## **5. DARPA M&D C2 Experiment 7**

**Project Description:** Spiral develop a multi-echelon, knowledge-based reasoning enhanced, command and control (C2) model of a "net-centric" battle command system. Through experimental investigations, which measure the effectiveness of its integrated battle command functions, inform the future force with the "Quality of Firsts" providing Commanders the decisive edge.

**Technical Approach:** Serve as core analytical team member and lead analyst for decision making EEA.

**Sponsor:** DARPA & PEO STRI.

**Partners:** MITRE, TRAC, ARA.

**General Research Topic:**

**Analysis of Battle Command Experimentation.**

- TRAC has access to data (audio, video, ground truth, etc.) from a series of DARPA battle command experiments with a notional future force using a futuristic battle command prototype against a thinking enemy in a contemporary operating environment.
- There are a variety of potential project topics involving situation awareness, decision making, collaboration and related battle command topics. Issues might involve ISR, BDA, effects, information, etc.

**Experimental Methodology** linking the battle command prototype, collaboration, situation awareness and decision making.

## **6. UAV Mix Tool Development And Analysis**

**Project Description:** The first phase is the UAV Mix Tool development. The UAV Mix Tool takes output from a simulation and determines the number of missions that can be performed. Output consists of a schedule for each UAV in the scenario. Follow on phases consist of UAV sensor selection, a design of experiments generator, and appropriate UAV simulation tools.

**Technical Approach:** A two pronged approach: Continue development of an analysis tool using OPL Studio. Develop an exportable tool through teaming with NPS faculty.

**Sponsor:** TRAC-HQ.

**Partners:** NPS

**General Research Topic:**

**UAV Mix Tool Development:**

- What characteristics of the combat system should be modeled and how?
- What are the critical questions to be answered and what measures of performance enable analysis to answer these questions?

**UAV Mix Analysis:**

- Analysis of unmanned aerial vehicle (UAV) mix alternatives for the Army.

Current and future capabilities impact the types and locations of UAVs needed to satisfy the Aerial CBA mission areas.

## **7. Unmanned Ground Vehicle Navigation: Image Analysis, M&S, and On-Board Guidance**

**Project Description:** UGV navigation is highly dependent on the perception of underlying terrain. Purpose is to use real-time/near-real time remote sensing imagery to build /enhance an M&S terrain data set to allow autonomous onboard navigation of military UGVs. The effort also seeks to automate the process of network generation for insertion into battle command and M&S systems.

**Technical Approach:** Employ object based extraction techniques to interpret multispectral high-res imagery / LADAR data, develop a maneuver network, conduct route planning, and demonstrate ability of UGV to follow network coupled with on-board sensors.

**Sponsor:** Nat. Center for Defense Robotics

**Partners:** ERDC, TARDEC, R&A Corp.

**General Research Topics:**

- Analysis of the requirements and alternatives for automating the process of network generation for insertion into battle command and M&S systems.
- Analysis of the requirements and alternatives for autonomous, on-board navigation of unmanned ground vehicles (UGVs).

Satellite imagery and LADAR data used to generate feature map and arc-node network for routing calculations.

## **8. Developing Commander to Sensor Metrics**

**Project Description:** Currently, sensors are placed on the battle space according to predefined templates dictated by guesses of information needs. Data is sometimes fused into information but information seldom is fused into the required knowledge to answer the commander's operational questions. Sensor data is numerous and is pushed to systems throughout the battle space.

**Technical Approach:** Develop metrics and human interfaces that allow information to be pulled to answer the commander's questions. Metrics should identify holes in the sensor data available so that new sensor placement requirements will result.

**Sponsor:** ARO.

**Partners:** NPS.

**General Research Topics:**

- Develop metrics and human interfaces that allow information to be pulled to answer the commander's questions.
- Analyze and develop methods to determine and display sensor coverage, and to plan and control organic sensors effectively as part of layered ISR.

Dynamic Model of Sensor Fusion and Situated Cognition

## **9. Dynamic Sustainment for Battle Command Analysis**

Project Description: Dynamic Sustainment is a maintenance model that can run either as a stand-alone module or can be linked to an entity-level combat simulation. It will inform the analysis process for studies of future systems. This model is successful when it is implemented with a simulation such as COMBAT21.

Technical Approach: Develop a discrete-event maintenance simulation using Simkit as the simulation engine. Implement model so it is capable of dynamically modeling sustainment in a simulation such as COMBAT21.

Sponsor: Log FACT, G3

Input from: TRAC-LEE, TRAC-WSMR, AMSAA, & CASCOM

General Research Topics:

- Modeling the maintenance requirements for combat systems.
- Simulating maintenance in various combat scenarios.

Dynamic Sustainment will address maintenance and CL IX issues

## **10. Logistics Battle Command Model**

Project Description: The LBC model will be developed with and for TRAC- LEE and it will build upon capabilities developed for Dynamic Sustainment. The LBC model will dynamically forecast and represent demand for supplies in a simulation such as COMBAT21. Priority of effort is Class III, V, and I. The LBC model also represents the distribution network including nodes (storage, maintenance, supply, medical and field services) and arcs (modes of transport).

Technical Approach: Capitalize on capabilities developed with TRAC-LEE and WSMR during the Dynamic Sustainment modeling effort. Develop a model that collects OPTEMPO and demand data from a combat simulation such as COMBAT21 and inject sustainment results back into the simulation. It can also connect to an aggregate simulation to estimate logistical demands and provide more detailed analysis of major operations.

Sponsor: LOG FACT, G3 (Proposed)

Input from: TRAC-LEE, TRAC-WSMR, AMSAA, & CASCOM

General Research Topic: Forecasting and representing demand for parts and supplies within a combat simulation.

LBC will work with a simulation such as COMBAT21

## **11. OneSAF Objective System (OOS) Behavior Model Analysis**

Project Description: Verification of OOS Block D (FOC) composite behaviors. OOS has created a set of core composite behaviors to model common entity and unit missions. Has tremendous implications on the suitability of OOS for analysis. Next step will consist of determining the robustness of modeled behaviors for use in analyses, as part of TRACWSMR effort.

Technical Approach: Develop and execute methodology to verify composite behaviors within OOS; ensure methodology is analytically sound and well-documented; determine behavior modeling requirements for use in analyses and measures of merit (MOMs); compare OOS behavior models against req'ts.

Sponsor: PM OneSAF

Partners: TRAC-WSMR

General Research Topic: Analysis of the available behavior models (OOS, CombatXXI, IWARS) to determine their suitability for use in analysis. Should include:

- Identification of the minimum set of behaviors required to represent the current and future forces.
- Prioritization of the set of behaviors based upon analysis requirements.

OOS Behavior Composer interface demonstrating the creation of composite behaviors from other composites and primitives.

## **12. Future Soldier & Small Combat Unit Systems**

1. Comparison and analysis of potential tactics, techniques, and procedures (TTPs) for Future Force Warrior (FFW) capabilities.
2. Comparison and analysis of potential distributed FFW capabilities.
3. Development of data and algorithms for weapon accuracy and effects in close range and quick reaction engagements.
4. Comparison and analysis of tactics, techniques, and procedures (TTPs) for close range and quick reaction engagements.
5. Analyze the potential effects on small unit (infantry) organization (i.e., squad and company unit size and composition) due to the development of potential FCS and FFW technologies.
6. Analyze the methods of presentation for situational awareness information and the effects of cognitive overload on soldier effectiveness.
7. Analyze Soldier concentration/attentiveness/focus and the unique manner in which Soldiers must quickly process information in the close-range, quick reaction environment characteristic of urban engagements.
8. Analyze the physiological effects of the proposed FFW ensemble on Soldier task performance.

## **13. Department of Homeland Security & the National Exercise Program**

1. Simulation modeling and analysis of National Exercise Program scenarios.
2. Development of war gaming capabilities and methods to support the National Exercise Program.
3. Exploring the benefits of simulation tools for the National Exercise Program.
4. Exploring guidelines for effective preparedness for emergencies at the local and state level based on the national response plan.
5. Exercises for effective communications during emergencies at the local and state level.

## **14. Logistical Modeling & Analysis**

1. Optimizing inventory of CL IX and mechanics for a BCT in full-spectrum operations.
2. Modeling and analysis of execution of maintenance operations in an urban battlefield environment.

3. Link logistics to operational plans (algorithms and models).
4. A comparative logistical analysis using Dynamic Sustainment (a recently developed logistical simulation tool) and a legacy model.

#### **15. UAV, UGV, and Sensor Modeling & Analysis**

1. Development of a UAV Mix Analysis Tool.
2. Design of an Experimental Design Tool for UAV Mix Analysis.
3. Comparative analyses of UAV Mix alternatives.
4. Developing Commander to Sensor Metrics.
5. Determination of Sensor Coverage using a low Resolution Simulation.
6. Unmanned Ground Vehicle (UGV) Navigation: Image Analysis, Modeling and Simulation, and On-Board Guidance.

#### **16. Command and Control**

1. Fighting the Counter Recon Fight in the Future Force. Gaining an information advantage includes defeating enemy reconnaissance; however, we do not know how this is best accomplished in a future lightweight network enabled force.
2. Managing Sensor Assets in the Future Force. A small, lightweight network enabled force must manage sensors well and understand sensor coverage capabilities and gaps; however, we lack methods to determine and display sensor coverage, and to plan and control organic sensors effectively as part of layered ISR.
3. Conduct analysis using resulting data and feedback from multi-cell and dismounted C2 experiments.
4. Support or participate in multi-cell and dismounted C2 experiments.
5. Development, improvement, and analysis of interfaces/displays for mobility data in battle command and embedded training systems.

#### **17. Others**

1. Modeling, simulation, and analytical support of rapidly provided capabilities (e.g. "Railcar" for logistical operations) in support of deployed forces.
2. Assessment of rapidly provided capabilities in support of deployed forces.
3. Development of concept for Military Enterprise Simulation Suite(s) (ESS).
4. Development of Decision Support Metrics for Army Programs.
5. Investigate the validity of the OneSAF Objective System (OOS) behavior modeling framework.
6. Compare the behavior modeling frameworks of CombatXXI, the Infantry Warrior Simulation (IWARS), and the OneSAF Objective System (OOS) and assess their compatibility and consistency.



## **ARMY SCIENCE BOARD**

### **Potential Thesis Topics**

**As of 1 November, 2005**

**POC: COL Ierardi, ASB**

**Email -- heather.ierardi@us.army.mil**

#### **1. Wireless Tactical Networking for the Modular Force**

The new task force study, "Wireless Tactical Networking for the Modular Force", is being sponsored by LTG Steven Boutelle who is the Army's Chief Information Officer and HQDA G-6.

This study will take a new look at opportunities, benefits and approaches, both technical and programmatic, for adopting emerging commercial wireless communication technologies and products based on IEEE 802.xx. The study will review the Warfighter Information Network - Tactical and Extended Range Multi Purpose UAV programs and examine other technological and programmatic opportunities, including high altitude, long loiter platforms for providing airborne communication range extension. The study will investigate migration to a "black" Internet Protocol core network for tactical level information assurance. The study will examine how the Army might proceed to ensure the best solution for managing the network including new commercial wireless systems and UAV communication range extension systems into an overarching capability.

Al Grasso will chair the study. Study sign-ups as of 20 October 2005 include: John Cittadino, Bill Campbell, Don Kelly, Jason Providakes, Bob Wynn, Cliff Pollock, and Bill Neal.

#### **2. Enhancements to the Total Army Modular Force**

This 2006 Task Force is being sponsored by the SECARMY.

This study will focus on Modular multi-function and supporting brigades not covered by the 2005 Modularity study, including the Aviation, Fires, Maneuver Enhancement, Reconnaissance, Surveillance and Target Acquisition (RSTA), and Sustainment Brigades as well as Special Operations Forces and the Army National Guard. The goal is identification of key issues and opportunities with promise for high payoff force capabilities and to expedite achievement of FCS-like capabilities. Issues to be examined include: operations in complex/urban terrain; improved deployability /expeditionary capabilities in full spectrum operations; enabling a significantly reduced total force footprint; enhancing sensor networks and other networks robustness with regard to threat disruption efforts; software integration and life-cycle; incremental software improvements. Also included focus areas are: Robotics; Development Surrogates, both software and platforms; New computing architectures; and software acquisition, testing and validation.

Dr. Robert Douglas and Dr. Valerie Gawron will chair this study. Signup list to be appended.

#### **3. Army Support to HLD/HLS/MSCA**

This 2006 Task Force Study is being sponsored by the G-3, Northern Command and the National Guard Bureau.

This study will be executed with 3 major subpanels on: 1) Architecture; 2) Interoperability and 3) Policy.

The Architecture Panel will assess: Joint Interoperability; Net-Centricity; and Interface Control at both Local and Federal level.

The InterOperability Panel's focus will be on: Commander Portfolio Requirements and Interfaces; Communications Equipment & Budget.

The Policy Panel will focus on Policy: Implementation; Requirements; Resources and Entitlements.

Joe Santarelli, Kurt Kovach and Jim Riley will chair this study. Participants signed up as of 10-20-2005 include: Bill Yeakel, Jack Borsting, John Farr, Ron Krisak, Bill Crowder, Dell Lunceford, Harry Thie, Ms Billie Miller, Paul Greenberg, John Cittadino, Jim Riley, Allan Mense, and Cliff Pollard.

Participants listed as possible ("On-Deck") include: MG Sam Kemp SME, Ira Kuhn, Tom Woteki, Loretta Moore, Larry Schneider, Herb Gallagher, Phil Dickinson, Gary Anderson, Wade Kornegay, Jim Carlini, Herold Mabrey, Kathleen Harger, Carlton Sherwood SME, and Tom Ridge SME.

#### **4. Summer Study on Business Transformation**

This 2006 Summer Study will be sponsored by the ASA for Financial Management & Comptroller, his Military Deputy LTG Sinn and Mr. Kirby of the SECARMY office.

This study is a follow-on to the 2005 Best Business Practices study. This study will have, at minimum, Panels on Human Resources as well as Logistics and Ownership.

The Human Resources Panel will focus on: Human Resources and Training issues, including: Recruiting initiatives effectiveness; the Personnel Management Modernization Program; The methods, technologies and structure needed to support individual training in units within the SMART Warrior program; and Relocation services management for the future.

The Logistics and Ownership Panel will look at: PBL at the system level; Class IX supply chain management; Resource forecasting models to include: BASEOPS SRM and AIM-HI for Class IX; Sale or commercial use of unneeded real assets; Outsourcing of selected DOIM services/assets (may include IT security considerations); Application software portfolio life cycle management; Equipment Fleet management opportunities.

Other possible issues being discussed are:

- Are Army businesses transformation and re-engineering initiatives meeting, or likely to meet, goals and expectations? (Develop metrics for assessing effectiveness) [This could be an overall objective or unifying theme.]
- ASA(FM&C)/ABO organization – separate project reporting direct to LTG Sinn project, probably not part of the BPSS 06.

This study will be chaired by Dick Ladd, Mike Shaler and LTG Max Noah (USA, Ret.).

#### **5. Intelligence Support to Small Units**

The ASB 2005 Task Force on Intelligence Support completed an interim report with two fundamental themes: 1) No patrol or convoy goes out

without adequate intelligence support; 2) A Combat Information Database is needed to accomplish the first theme.

The Army G2 has requested and is sponsoring a continuing / follow-on 2006 Task Force study focusing on three areas:

- 1) Developing a functional structure and concept for the Combat Information Database.
- 2) Suggesting means and methods by which to operationalize "patrol oversight" and "real-time" intel support to small units.
- 3) Survey available technologies and technologies under development which could improve the collection, analysis, posting, sharing, and communication of data, and to support 1) and 2).

The task force will provide interim reports in January/February, May/June, and August 2006 to LTG Kimmons.

The current Panel is chaired by Dr. Michael Wartell and Gary Glaser, with Peter Swan, Lawrence Schneider, Richard Wishner, Alex Miller, and Alfred Grasso as Members.

## **6. Science and Technology for the Future Force**

The purpose of this 2006 Summer Study is to evaluate the existing Army S&T portfolio against the requirements of the future force, and to recommend options for addressing the gaps. This study is sponsored by the ASA for Acquisition, Logistics and Technology.

Activities to achieve study objectives include: 1) Evaluation of present and planned S&T priorities and investment areas against the requirements of the future force and the war on terror; 2) Identification of S&T gaps and opportunities for reinvestment; 3) Evaluation of S&T programs in other military branches, DARPA, other DoD entities, DoD FFRDCs, other federal agencies, the National Laboratories, and industry to seek opportunities for leveraging Army investments and/or filling gaps in Army investments; 4) Evaluation of the strategy for synergistic S&T investment partnerships; 5) Evaluate the balance of S&T investments in support of the FCS versus other priorities; 6) Evaluation of metrics used to assess S&T programs; and 7) Identification of key S&T priorities for long-term S&T investment.

The study is chaired by Dr. Allen Adler, Gil Herrera and LTG Charles Otstott (USA, Ret.). The study panel will include: John Alexander, Jim Carlini, Darrell Collier, Herb Dobbs, Kathleen Harger, Chuck Jacobus, Wade Kornegay, Allan Mense, Jason Providakes, Tom Schilling, Nick Tredennick, Steve Kornguth, John Blair, Marygail Brauner.

## **7. Information Operations**

An extension to LTG(R) Funk's 2005 Info Ops Task Force study. Awaiting text from LTG(R) Funk, but it will be similar to the 2005 version.

## **8. Counter Asymmetric Threat Study**

Extension to the 2005 Task Force Study of the same name. Awaiting text from study chairs, again this will be similar to the 2005 study.

(A personnel change from 2005, the 2006 chairs are Buddy Beck and LTG(R) Campbell.)

## **TRADOC FUTURES: FY06 Research Studies**

1. What are the challenges, complexities, and impact on operational design of conducting and sustaining stability and reconstruction operations concurrent with offensive or defensive operations?
2. What are the approaches to solve strategic and operational problems to escape the linearity of Joint and Army processes and identify alternative ways to intellectually frame the nature of a conflict and operational design?
3. What are the operational considerations, implications, and approaches for the conduct of FF operations in a nuclear environment? How does the modular Future Force secure or neutralize an adversary's nuclear capability and what are the potential impacts of employing modular forces in raids and strikes to achieve this end?
4. Given the lack of Joint Doctrine and Future Force Concepts on the conduct of defensive operations, how does the combined and joint force conduct defensive operations in the future operational environment? What is the Army's role? What are the elements of current Army doctrine (FM 3.0, 2001) that change and do not change?
5. Given projected 2015 force levels, global positions, and capabilities, what are the limits and capacity of the Army to support and sustain distributed operations?
6. What are the implications for national defense policy, joint operational concepts, and Army concepts if the U.S. defense community fails to achieve projected advances in military technologies necessary to establish higher levels of situational understanding and information superiority, reduction of sustainment demand, or the capability to conduct vertical maneuver of mounted forces?
7. What joint battle command capabilities and geospatial systems and processes are required to enable fusion of joint ISR, establishing and maintaining targeting priorities and establishing combat assessment for the FF?
8. What are the sustainment demands for the Future Force and what are the logistic command and control concepts and capabilities necessary to support simultaneous, distributed operations from strategic distances, and to provide the capability to deliver and sustain combat power at multiple entry points across the range of military operations?
9. What are the deployment requirements to enable DoD swiftness goals, what lift capabilities are required to meet those goals, and how can Operational Maneuver from Strategic Distances be accomplished without advanced lift capabilities?
10. What advantages/disadvantages are achieved through a family or commonality of systems with respect to: operations (i.e., conduct of combat missions), logistics (i.e., maintenance, repair procedures, parts, assemblies, stockages, etc.), personnel (i.e., reduction and consolidation of MOSs), and training (i.e., individual and unit)?
11. What future integrated marketing (product, price, placement, and promotion) and branding concepts/activities are required to locate,

- target, and screen-in those in the youth market that have the potential to become the Future Force Soldier?
12. What future Accessions process concepts and/or capabilities are required to effectively and efficiently prospect, recruit, and conduct initial military training for the Future Force Soldier?
  13. What are the training, leadership development and education, and life-long learning capabilities and processes required to effectively and efficiently prepare and sustain the Future Force Soldier and Leader?
  14. What are the implications of materiel and organizational changes (e.g. FCS, ARFORGEN model, modularity, and the transition to UA and UEX) on training, leader development and education, and life long learning requirements?

## **BROAD TOPICS**

### **FY06 Current and Future Force Capability Gaps**

#### **Current Force Capability Gaps:**

- C1. Networked Enabled Battle Command (BC)
- C2. Protect Force in Counterinsurgency Operations
- C3. Soldier Protection in Counterinsurgency Environment
- C4. Logistics in High OPTEMPO or Non-Contiguous Battle space
- C5. Ability to Conduct Joint Urban Operations
- C6. Timeliness of Analysis and Information Dissemination
- C7. Train the Force How and As it Fights
- C8. Joint Interoperability, Coalition and Interagency Operations
- C9. Enhanced ISR Capabilities
- C10. Responsive, Networked Indirect Precision Fires
- C11. Tactical Communications
- C12. Stress on the Force
- C13. Non-Lethal Capabilities
- C14. SOF & Conventional Forces Integration
- C15. HUMINT
- C16. Cultural Awareness
- C17. Information Operations
- C18. Force Packaging
- C19. RC Mobilization / Deployment
- C20. Detention / Detainee Operations

#### **Future Force Capability Gaps:**

- F1. Enhanced Soldier Protection
- F2. Modular, Scalable, and Tailorable Battle Command and Control
- F3. Enhanced Platform/Group Protection
- F4. Dynamic, Uninterrupted C4 Architecture
- F5. Enhanced ISR Capabilities
- F6. Modular, Tailorable Forces
- F7. Ability to Train the Force How and As it Fights
- F8. Ability to Detect and Identify Full Range of Obstacles
- F9. Capability for Lethal Overmatch
- F10. Sustainment of Modular Forces